

2018

Trans-co-design in systemic approach to architectural performance: The multi-layered media and agency in creative design and its processes

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The background features five vertical lines in cyan, blue, blue, purple, and purple. Each line is adorned with a series of yellow dots. Curved, thin yellow lines sweep across the background, creating a sense of movement. Small yellow arrowheads are scattered throughout, pointing in various directions. The overall aesthetic is modern and architectural.

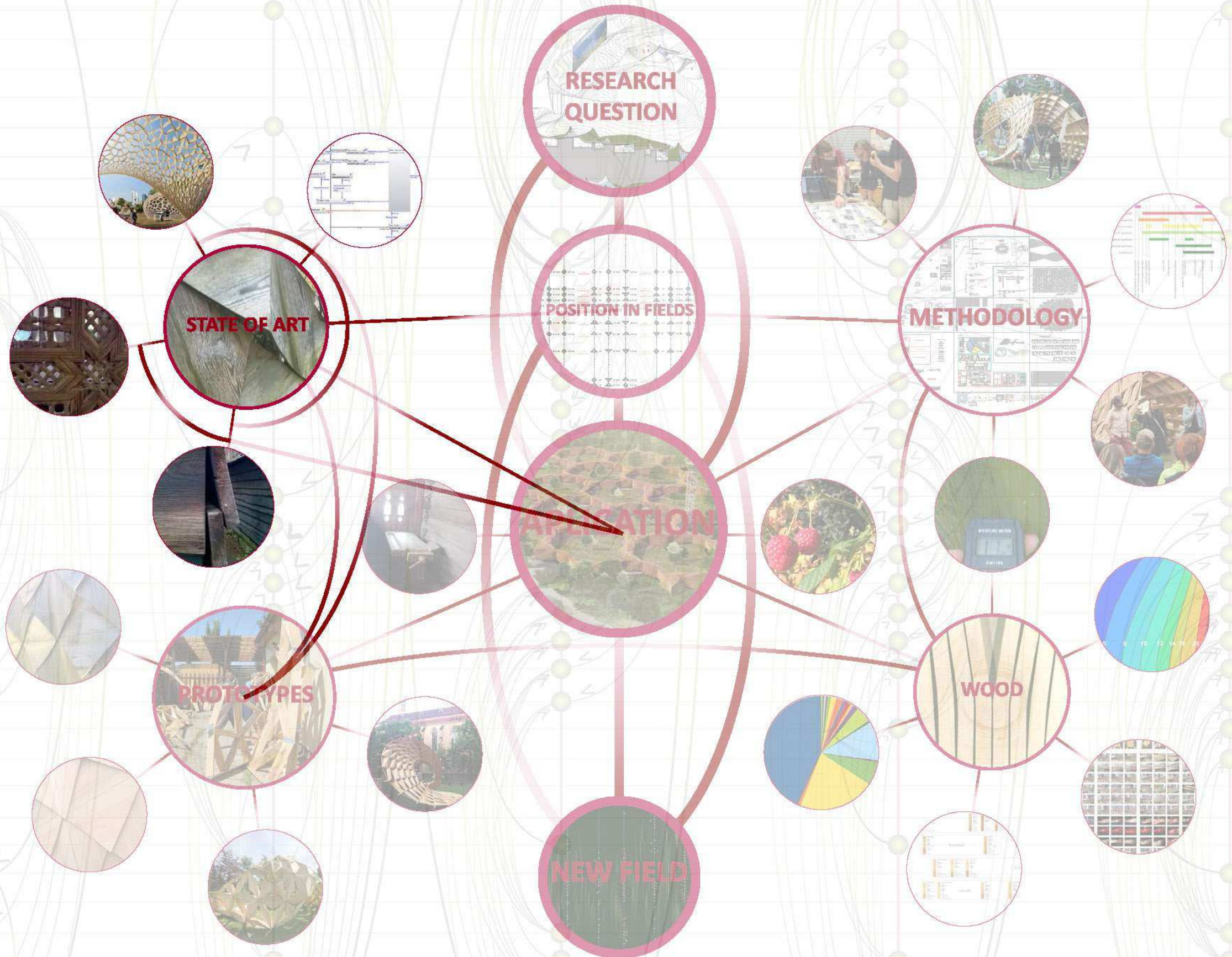
Trans-Co-Design in Systemic Approach to Architectural Performance

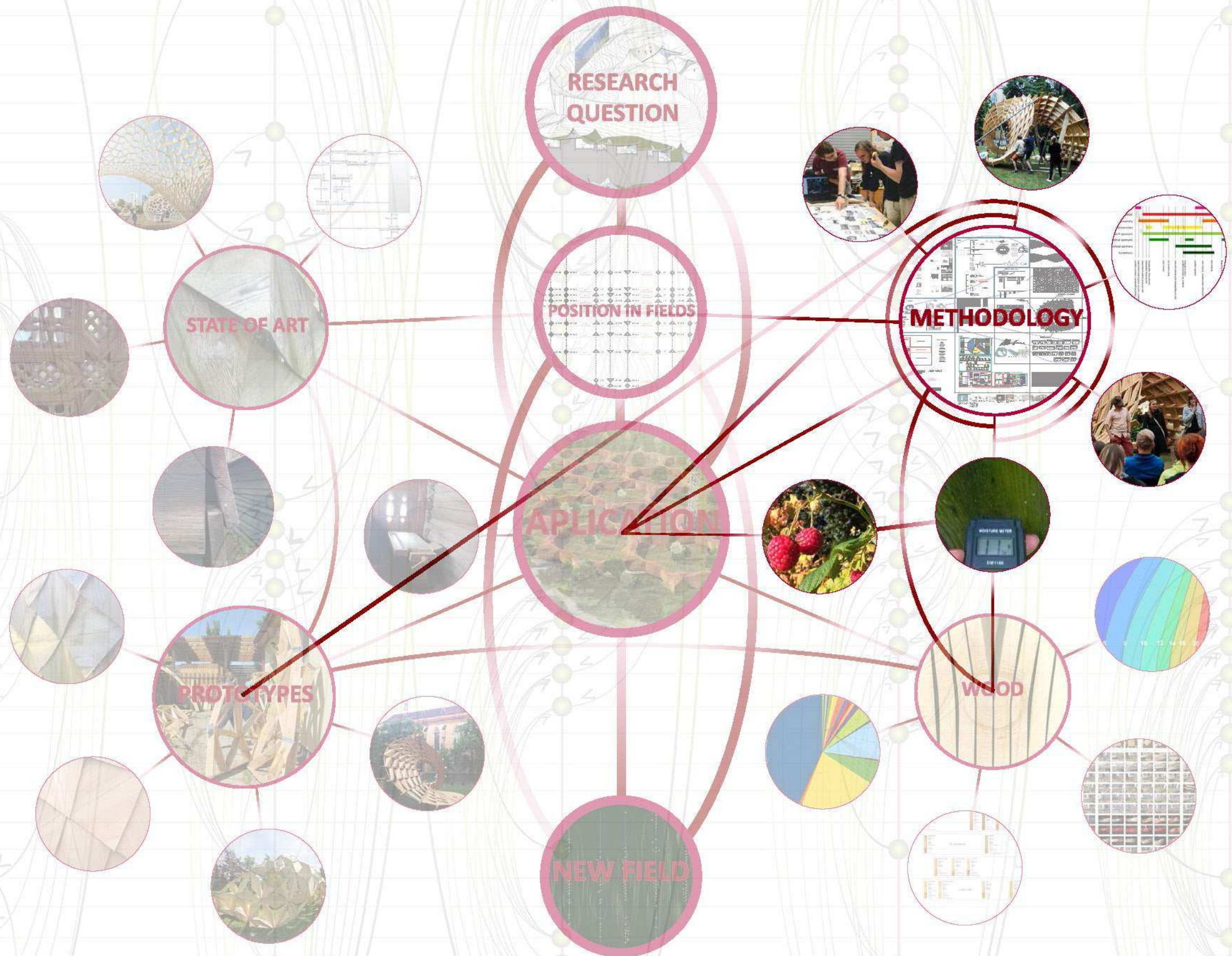
The Multi-Layered Media and Agency in Creative Design and Its Processes

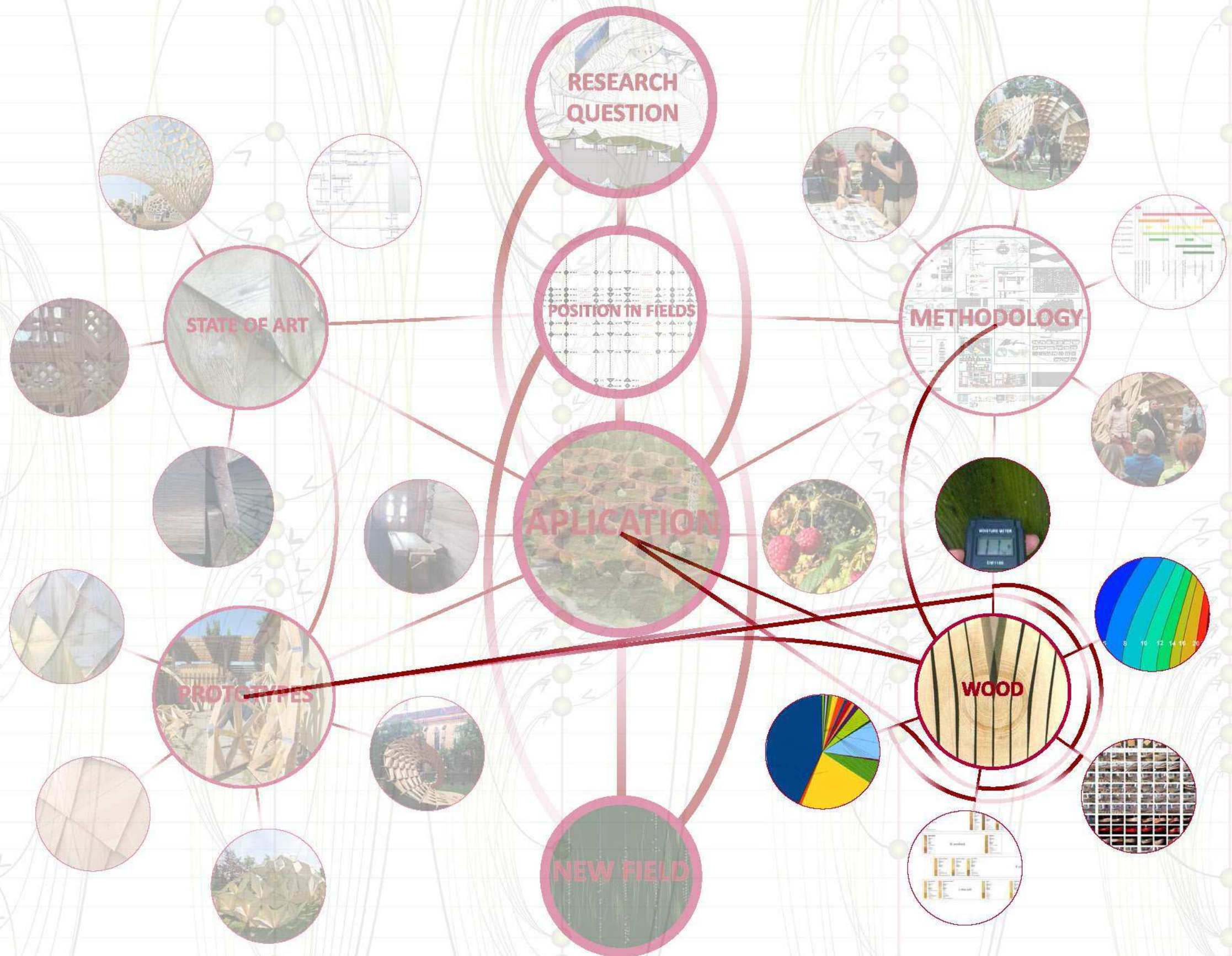
Marie Davidová

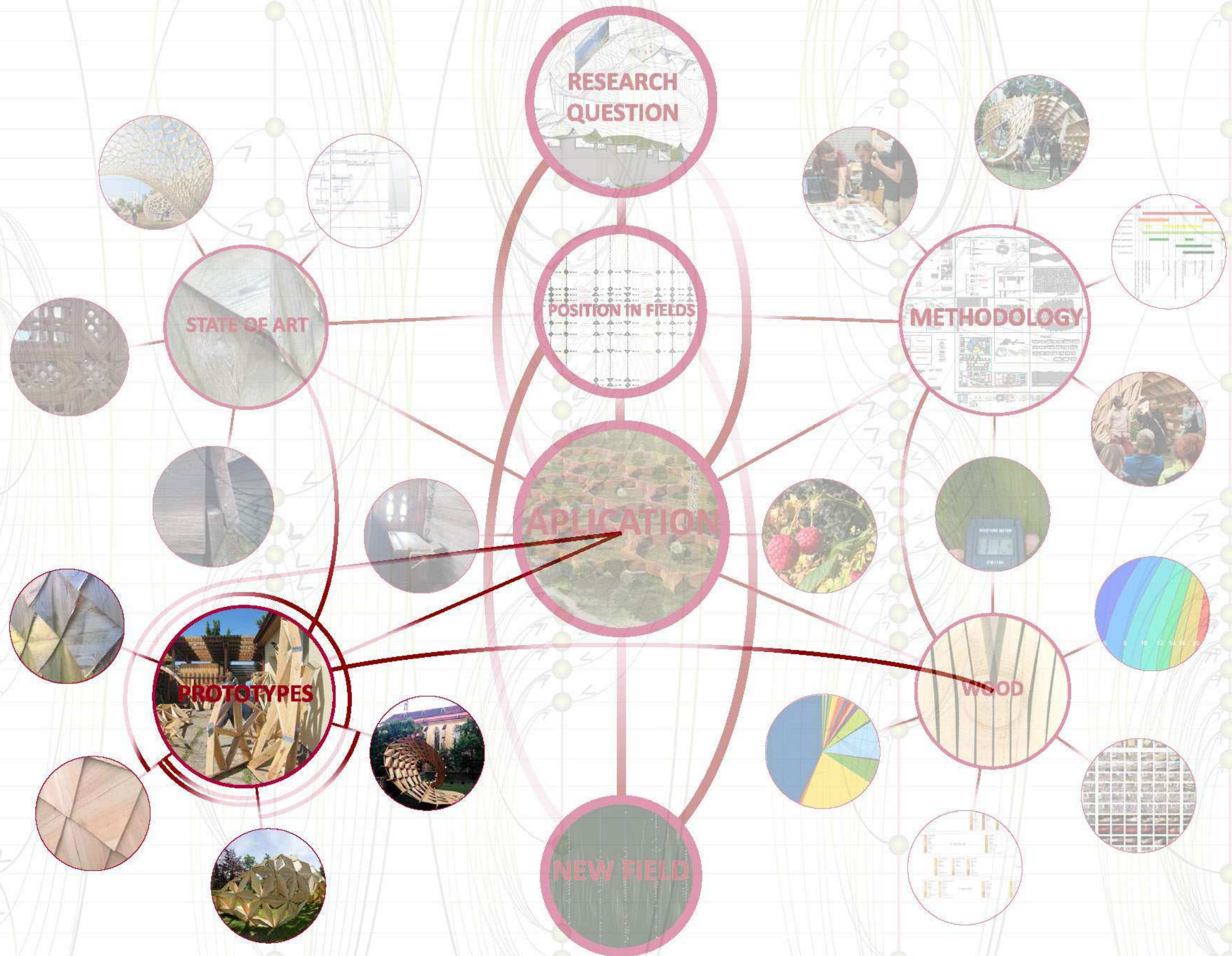


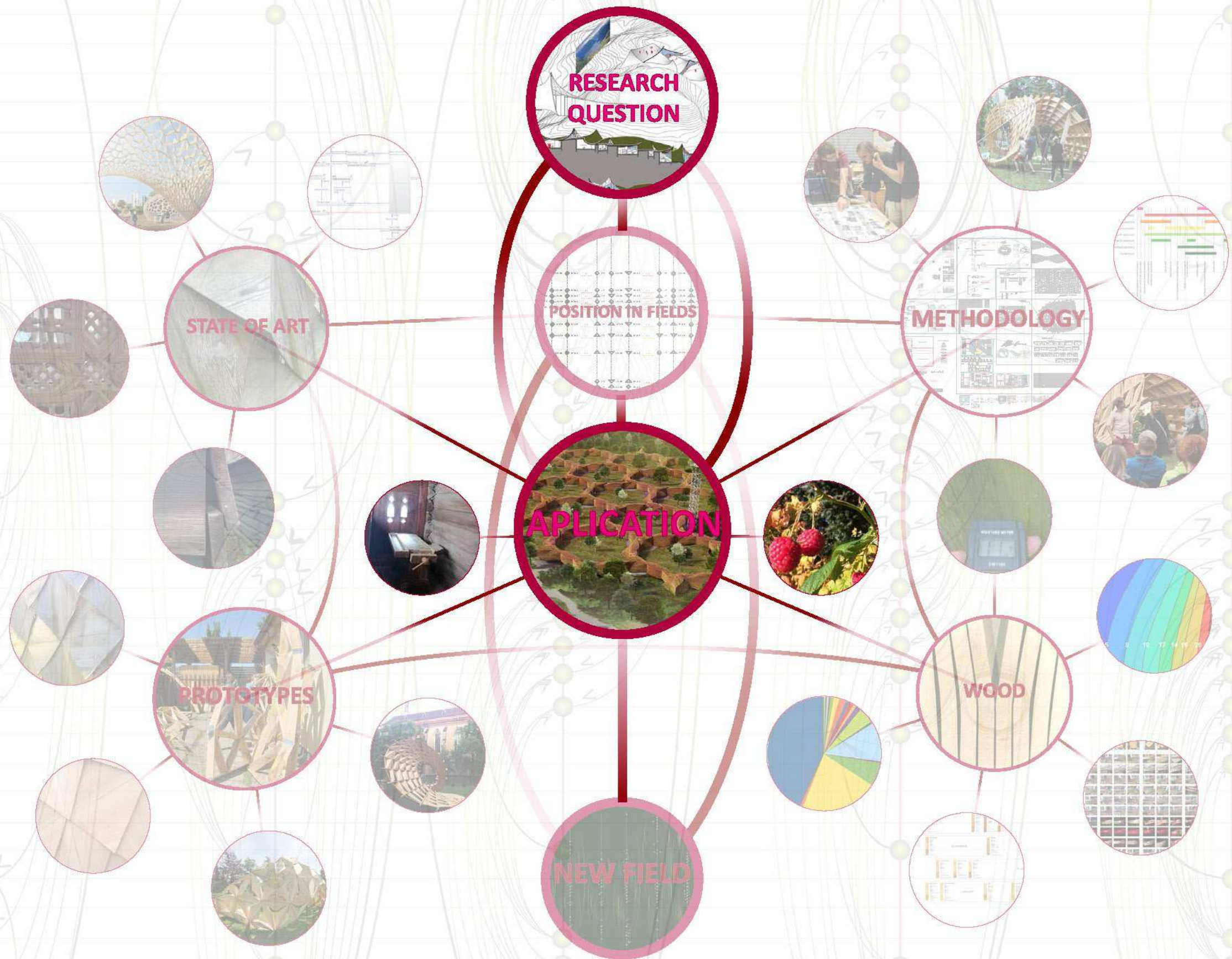


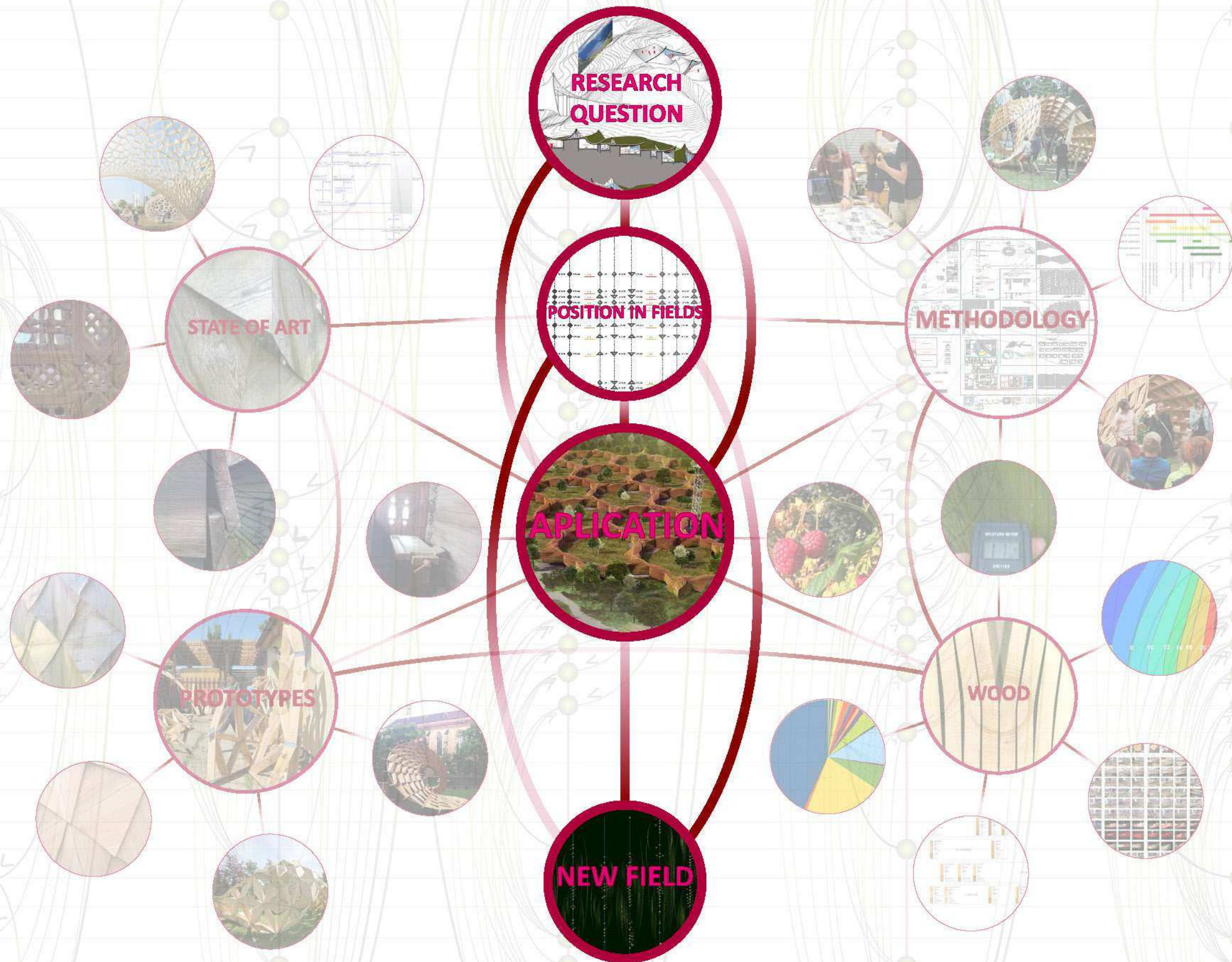














> Focusing on Landscape, Social and Cultural Ecology in Built Environment for Co-Living Performance

> Shift from Anthropocene in Built Environment

> Biodiversity and Climate Change Adaptation





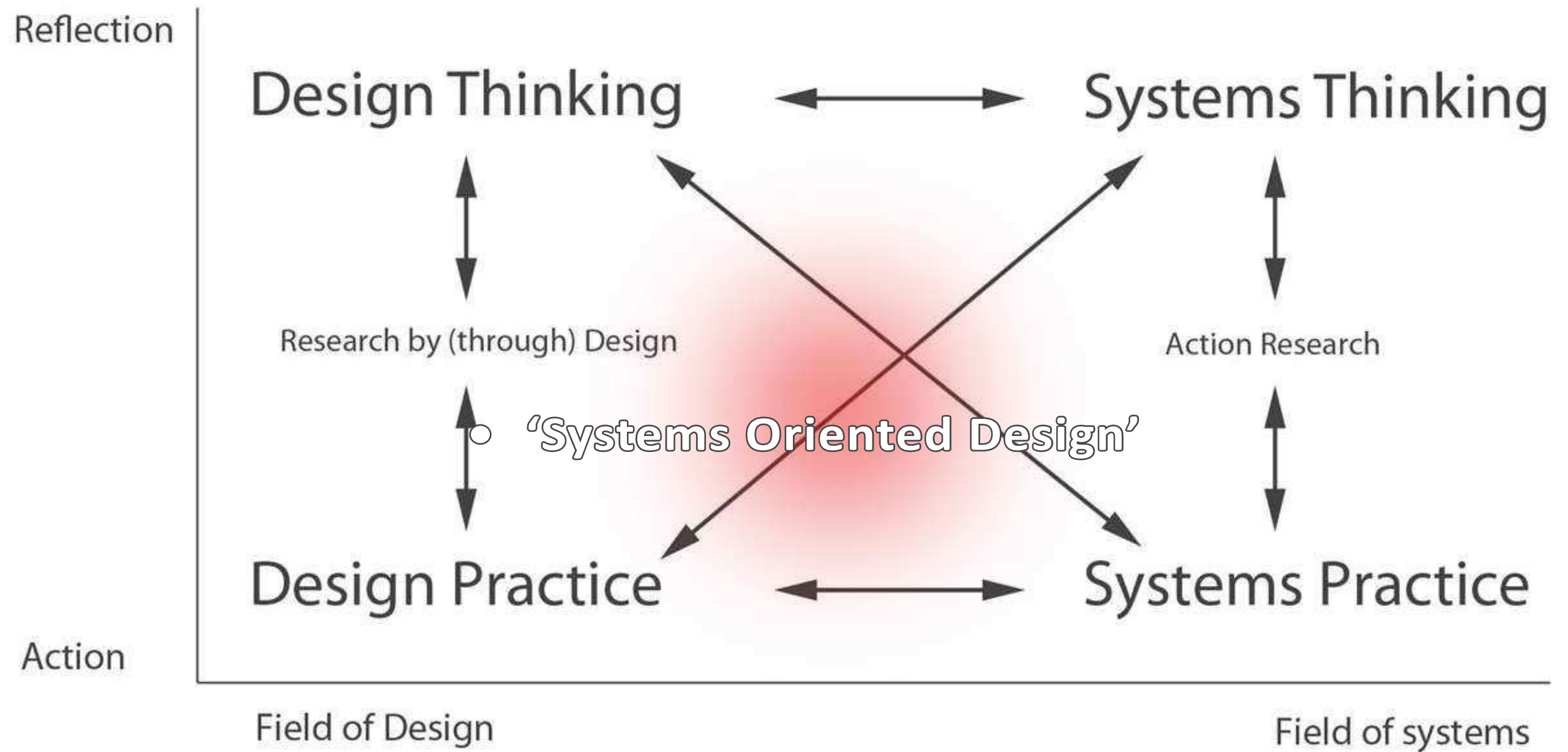
> architectural design and construction

> holistic approach

> real life laboratory

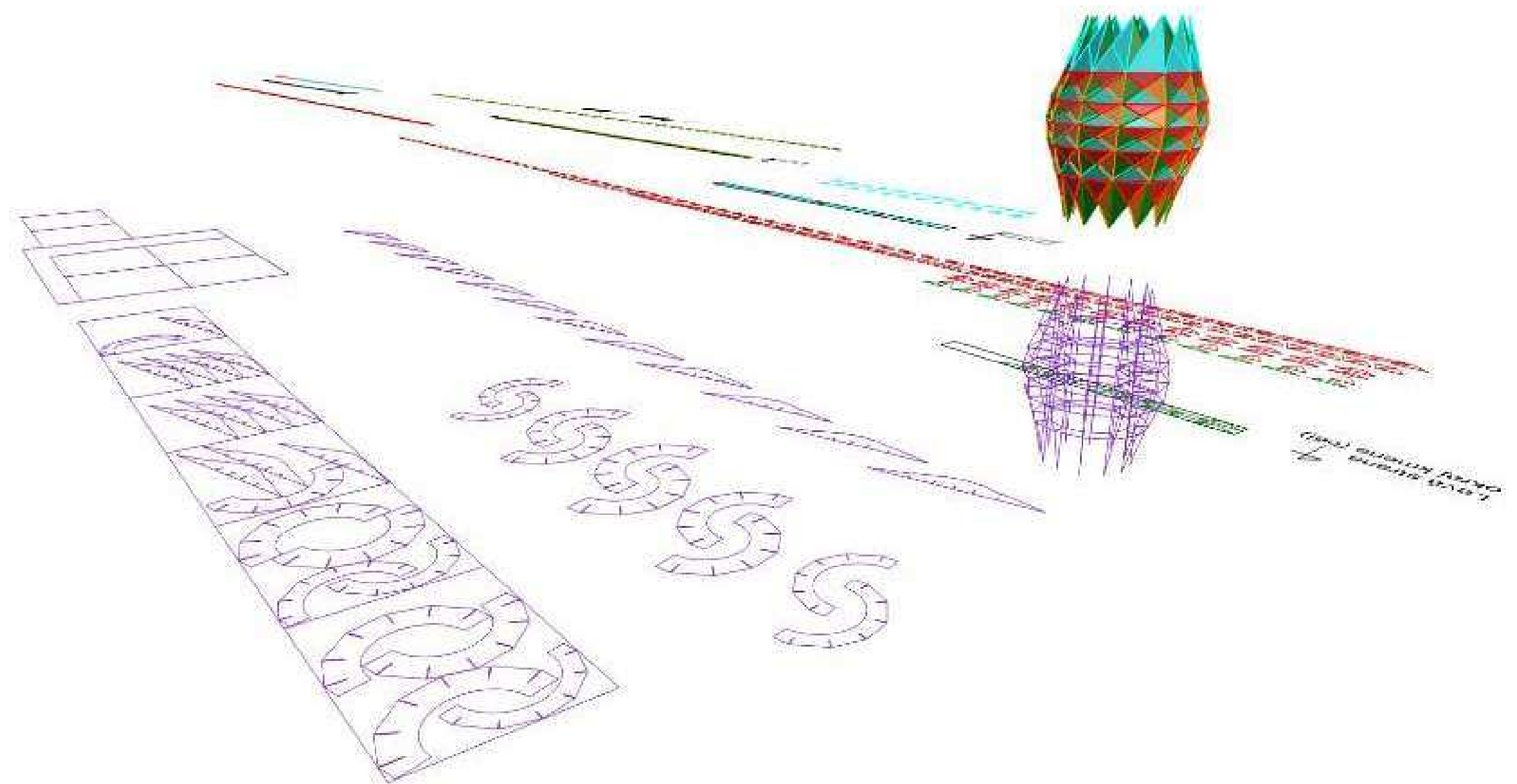
> Fusion of Several Process-Based Fields:

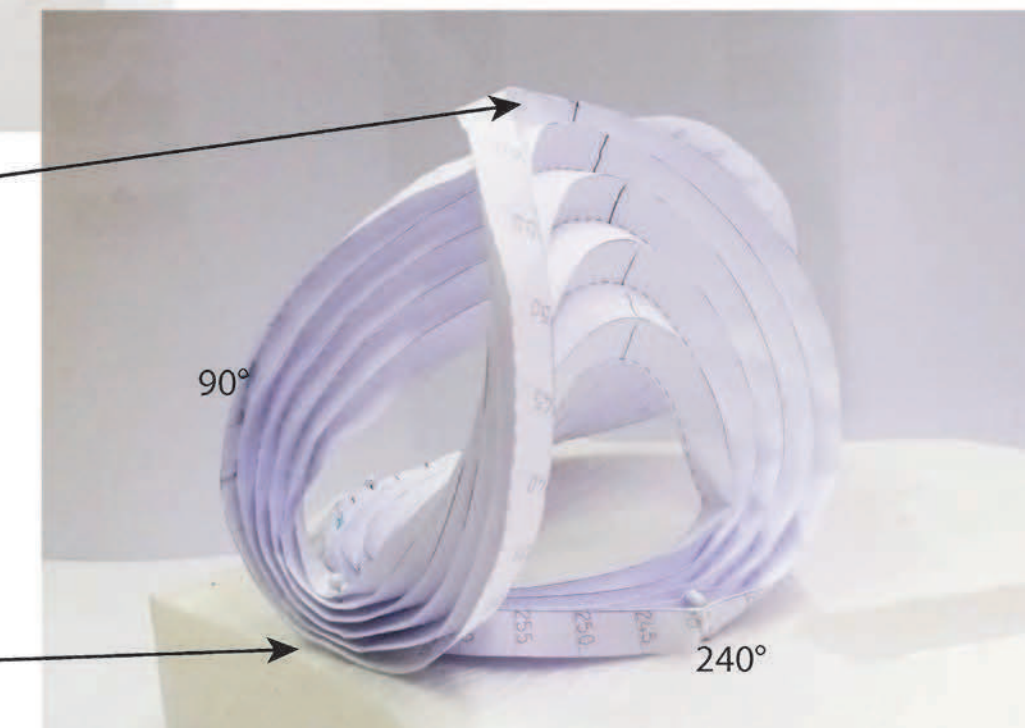
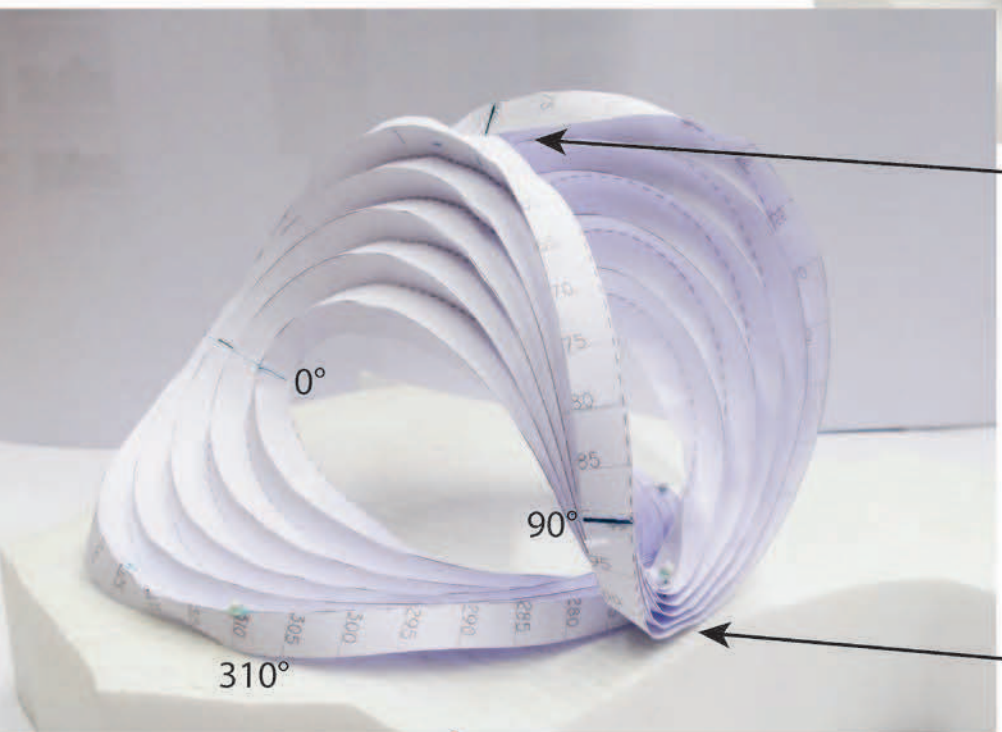
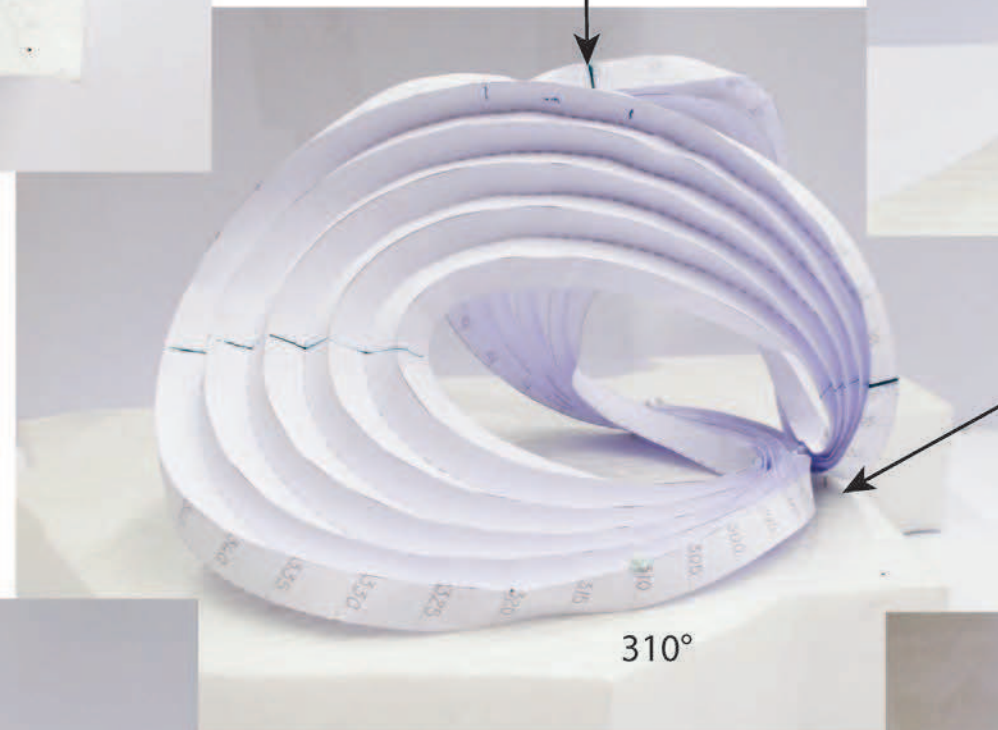
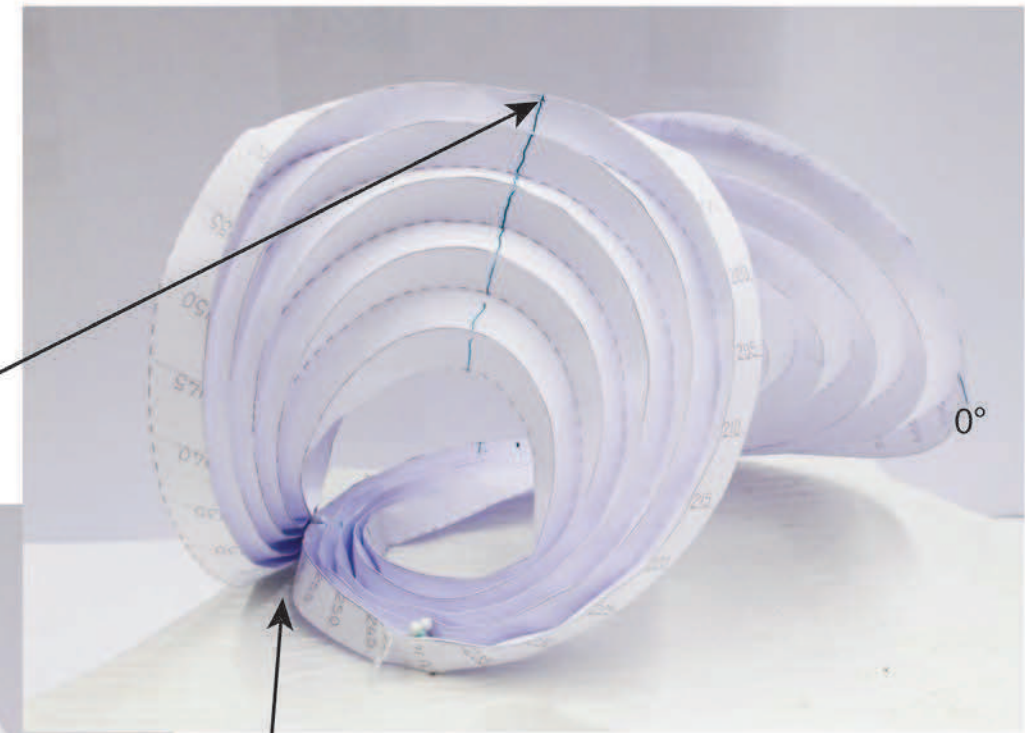
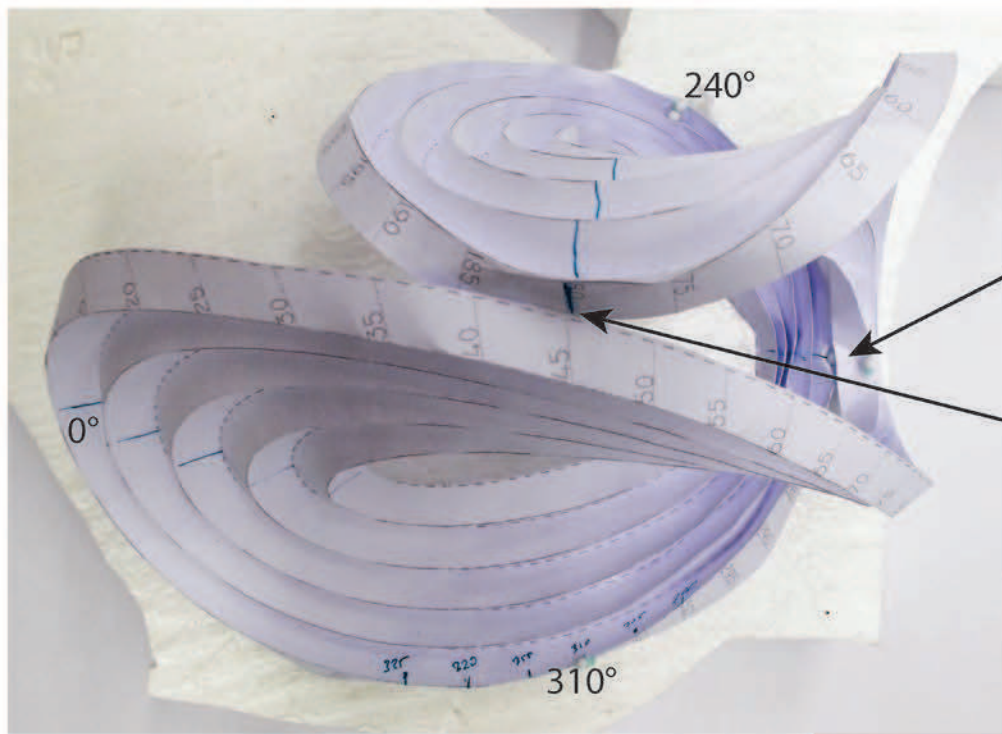
- 'Systems Oriented Design'
- 'Performance Oriented Architecture'
- 'Prototypical Urban Interventions'
- 'Time-Based Design'
- 'Service Design'
- 'Co-Design, Co-Creation and DIY'







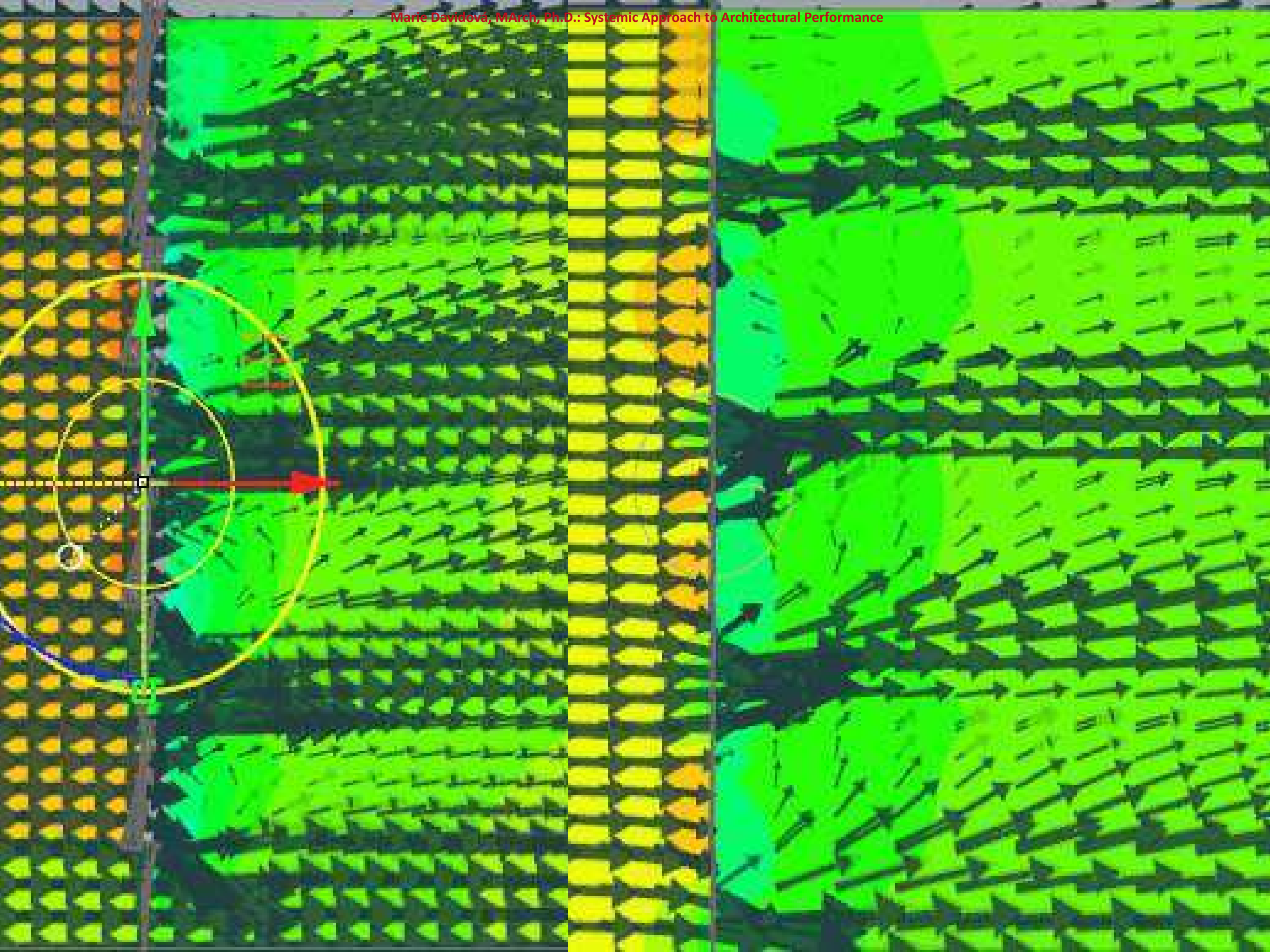




- **‘Performance Oriented Architecture’ > Responsiveness**







- 
- Eco-Systemic ‘Prototypical Urban Interventions’
 - > Generativness





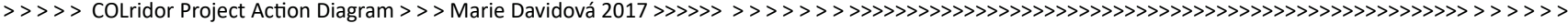
ΠΑΝΕΠΙΣΤΗΜΙΟ
UNIVERSITY OF CYPRUS
ΠΟΛΥΤΕΧΝΙΚΗ ΣΧΟΛΗ
ΤΜΗΜΑ ΑΡΧΙΤΕΚΤΟΝΙΚΗΣ
FACULTY OF ENGINEERING
DEPARTMENT OF ARCHITECTURE



Photo: Wágnerová 2013



- 'Time-Based Design' > Generativeness













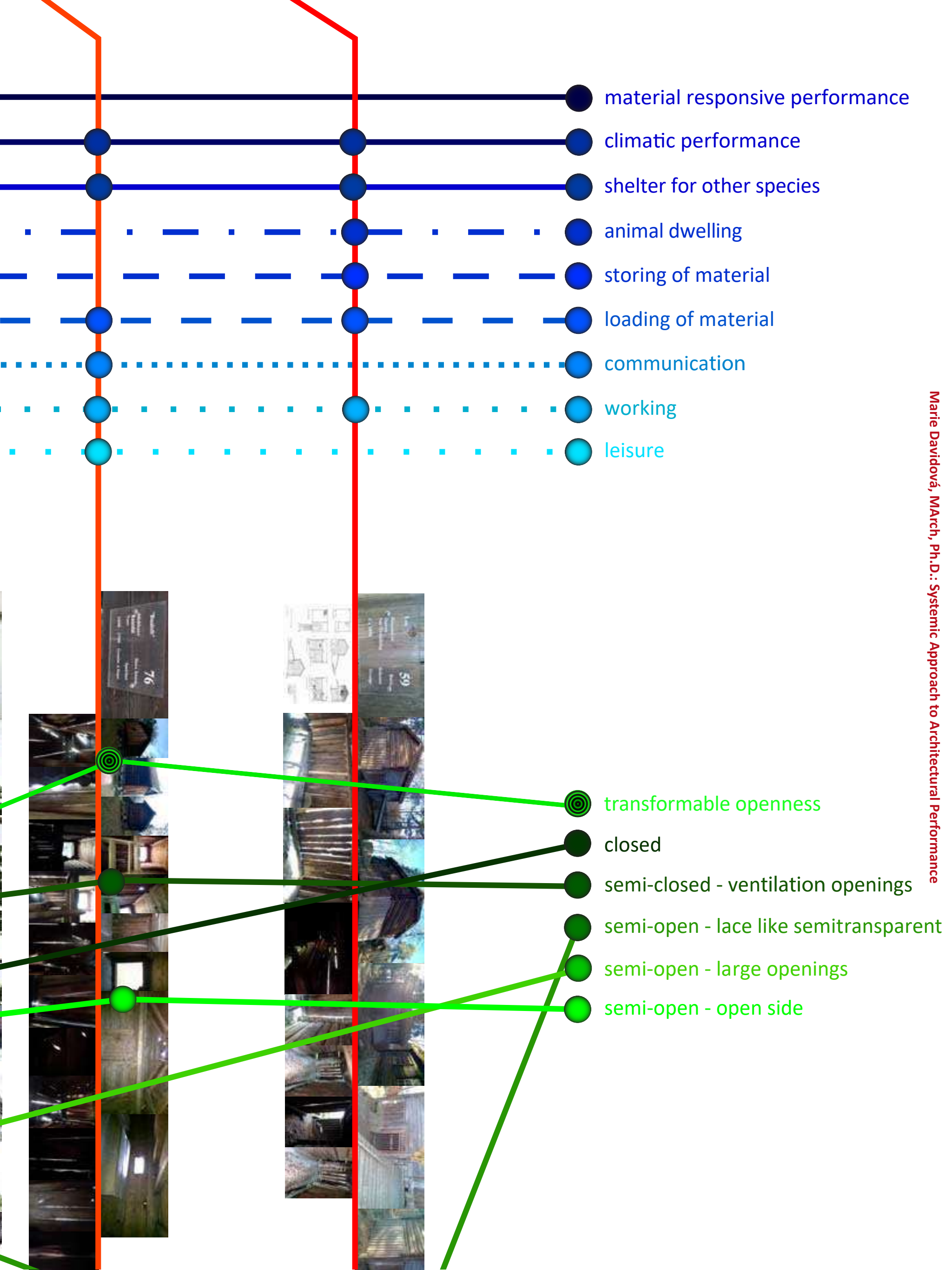


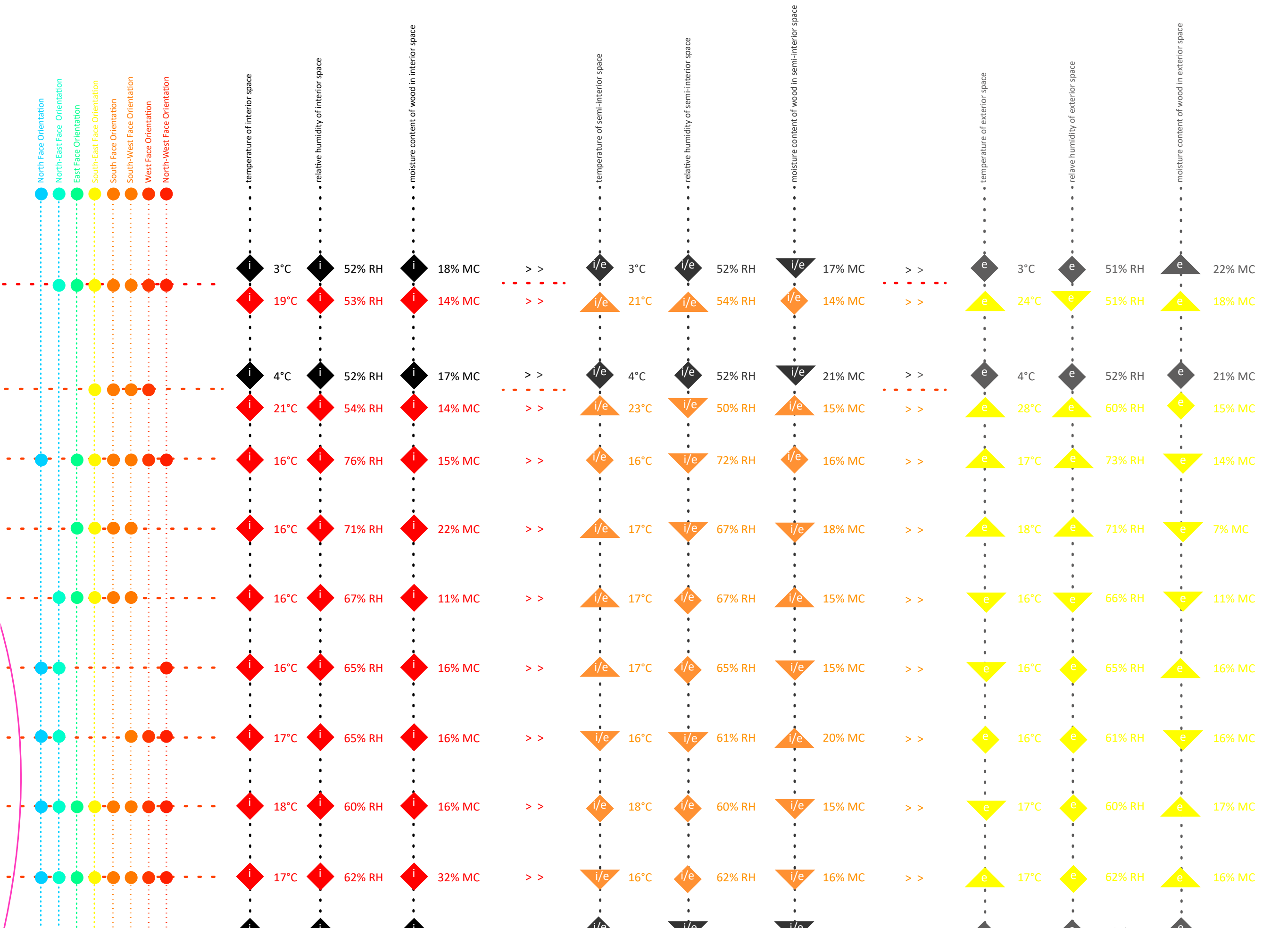












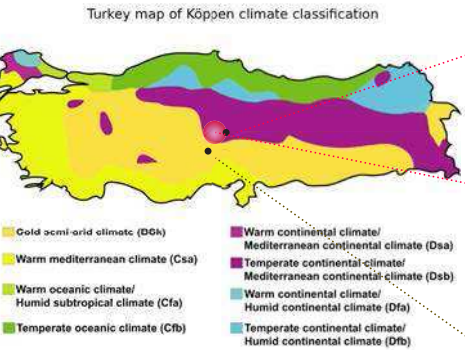




Ground and Semi-Ground Inhabitation:
Cappadocia Case Study Thematic GIGA-Map

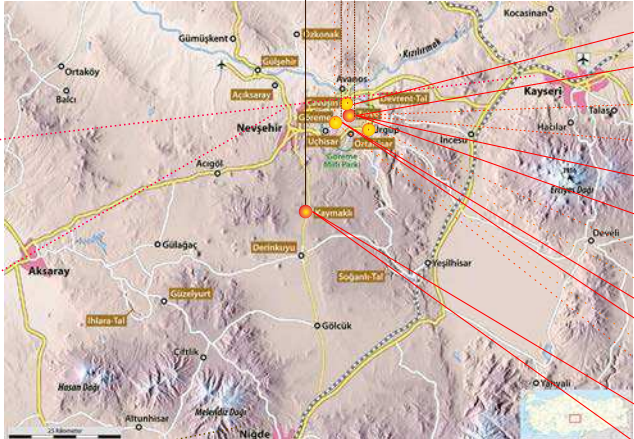
author: Marie Davidová
project: Traditional Architecture and Its Performance
funded by Student Grant Competition at the Technical University of Liberec, Czech Republic

The thematic GIGA-Map is relating macro and micro climatic relations of exterior and semi-interior spaces with geological position and world axis orientation, substrate and additive building within and with tuff stone. The dashed lines express intensity and periodicity of the occurrence of certain fields, while the marking dot suggest the abundance by their size and intensity by gradients. The graphics arrows express increases and decreases, while the text arrows suggest the reading directions. The map clearly expresses, that when designed vise, the semi-interior space without full enclosure, can manipulate the internal climate up to approximately 10°C through the ground material and natural ventilation, and different climates and word axis orientations were designed for different purposes of use. This also relates to co-habulance with different species with different climatic, excess and spatial needs.



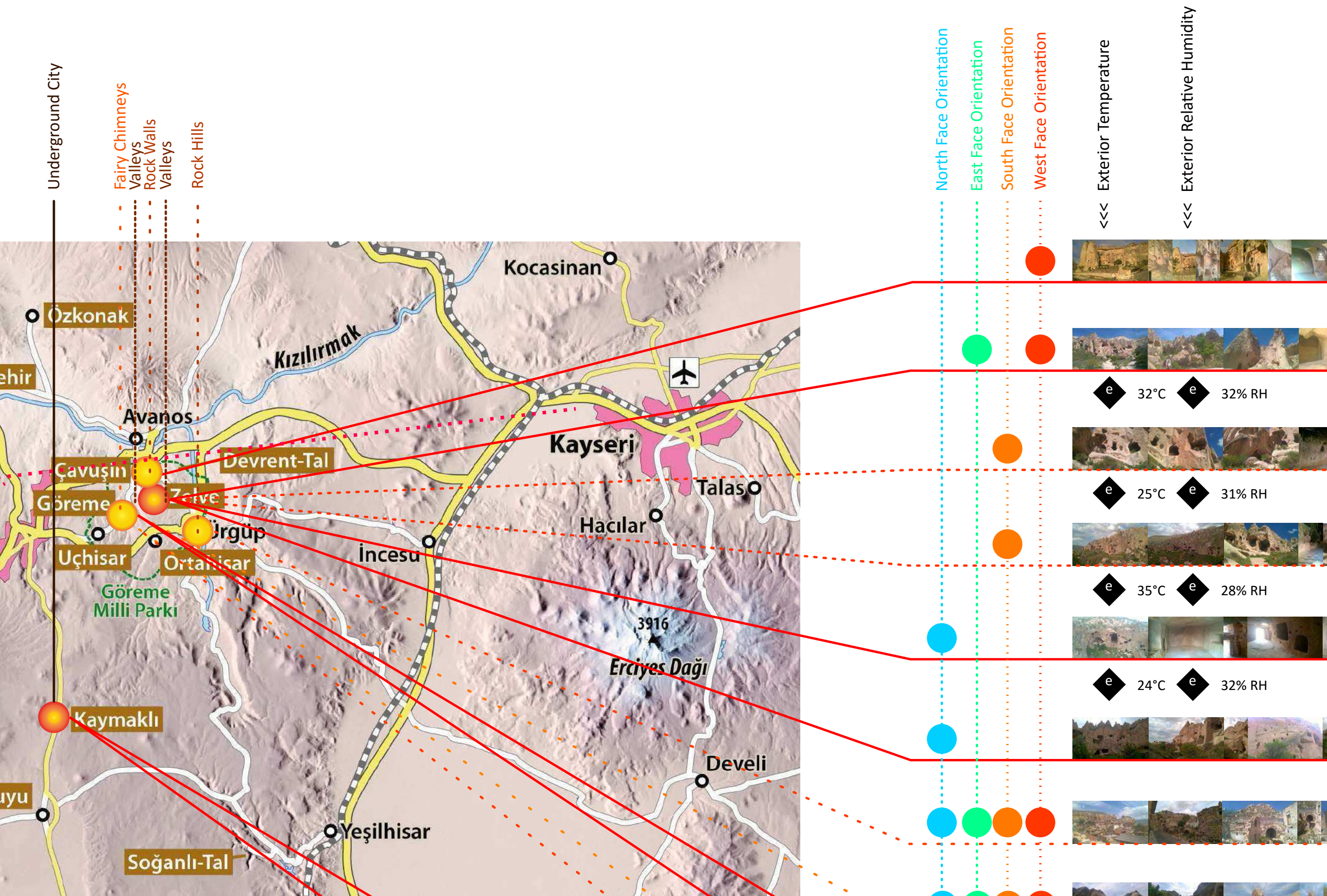
All Data Enhanced, modified, and reworked. - Derived from World Expert Classification map
source: https://climate.geog.udel.edu/geodocs/WorldClim_v2.1/figs_fig_01_KC%20Köppen_climate_classification.png
This file is licensed under the Creative Commons Attribution-Share Alike 4.0 International license.

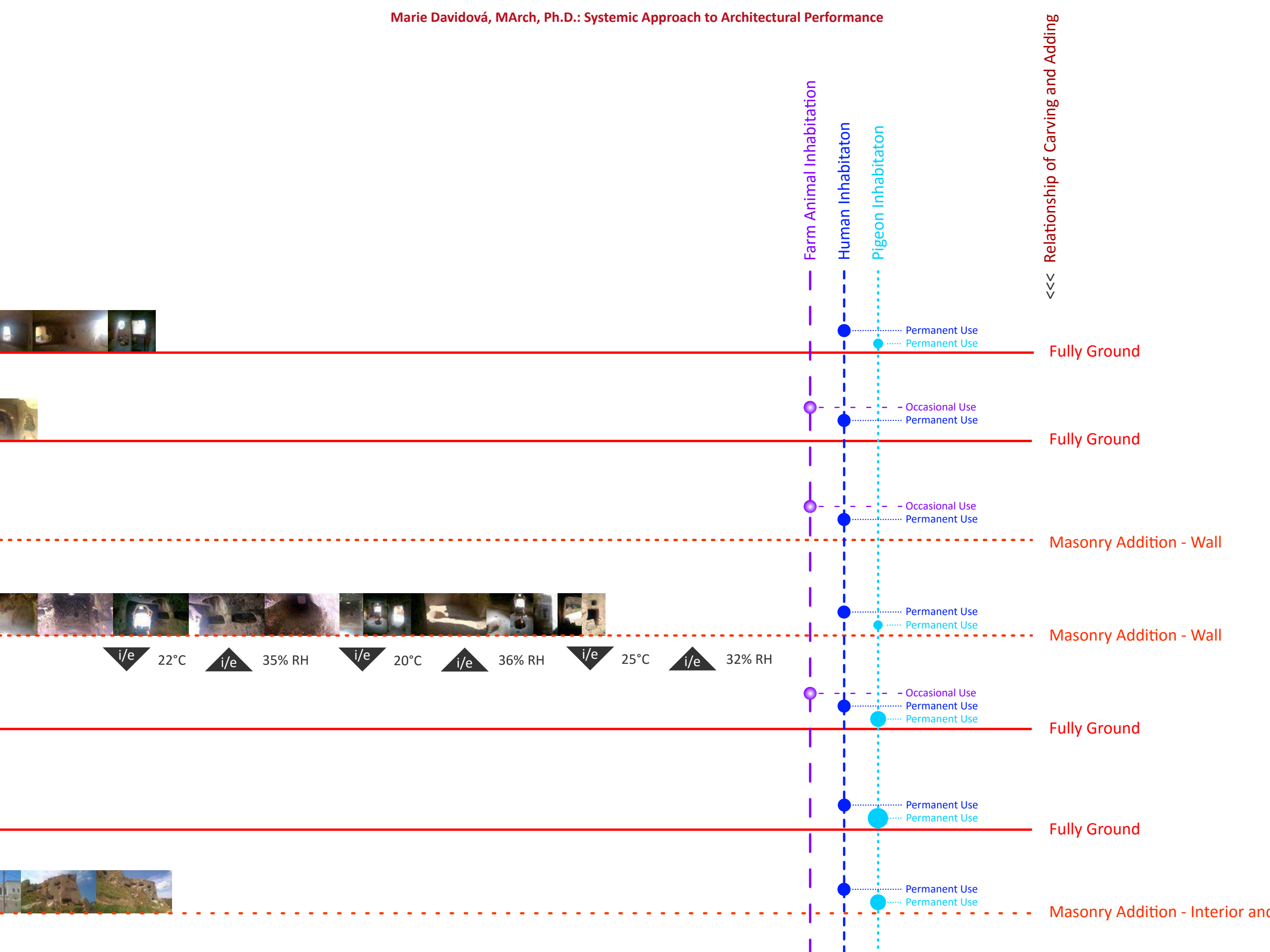
Local and Related Climate



author: Mapbox Data Collection, source: <https://openmaptiles.org/en/2.0/01-Map-Data/>, <https://www.cappadocia.gov.tr/>, <https://www.cappadocia.gov.tr/en/>,







del snitt
1:100

På Vei:

- speculation

BB'

AA'

0 2 5 10

snitter
1:200

PÅ VEI

6.1 Recepsjon
7.1 Butik
7.2 Garderobe

7.3 Utstillingsareal

6.5 Gardrobe

1.2 Lager ureint

2.0 Magasin

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6.1 Recepsjon
7.1 Butik
7.2 Garderobe

7.3 Utstillingsareal

6.5 Gardrobe

1.2 Lager ureint

2.0 Magasin

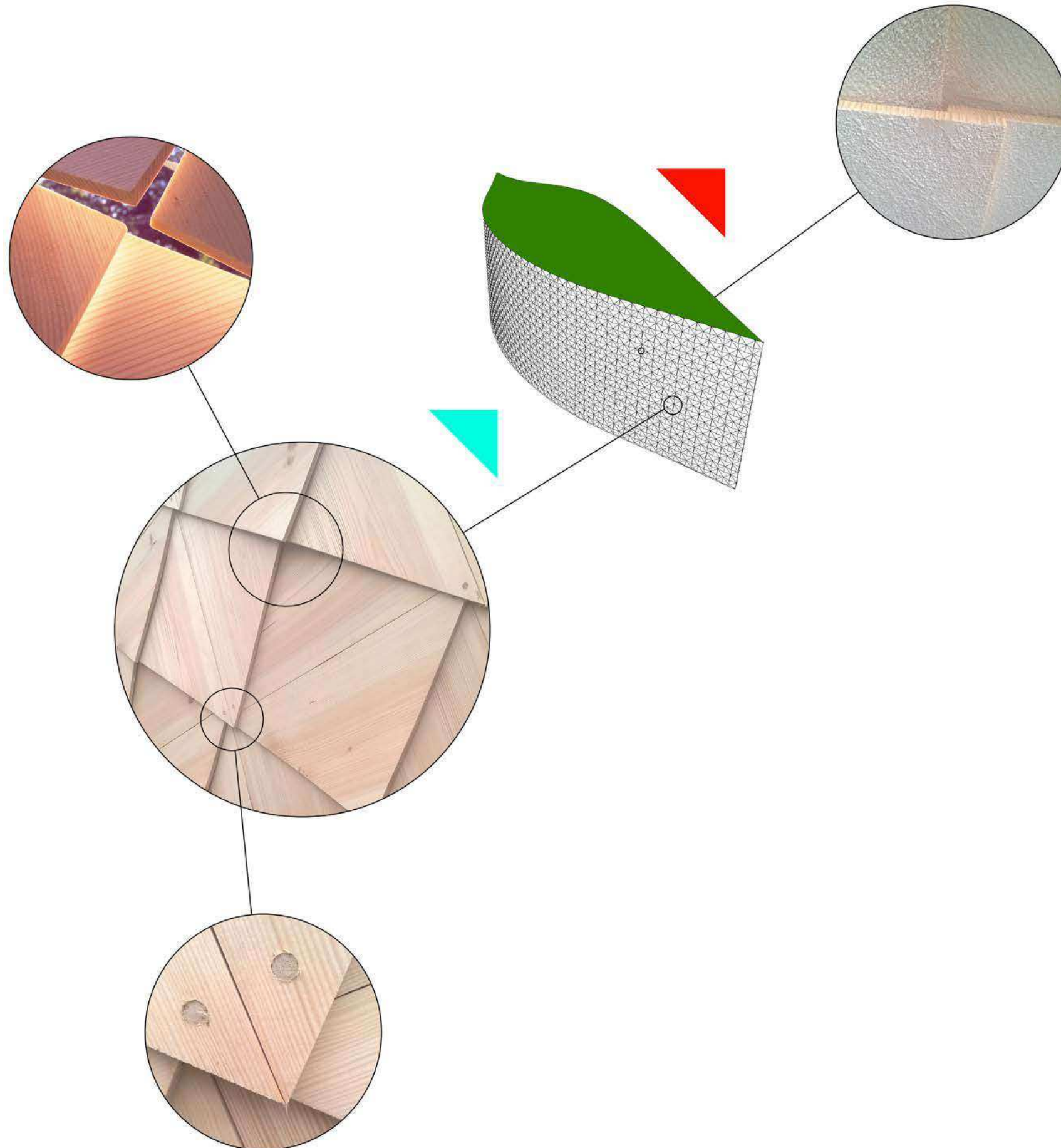
2.0 Magasin

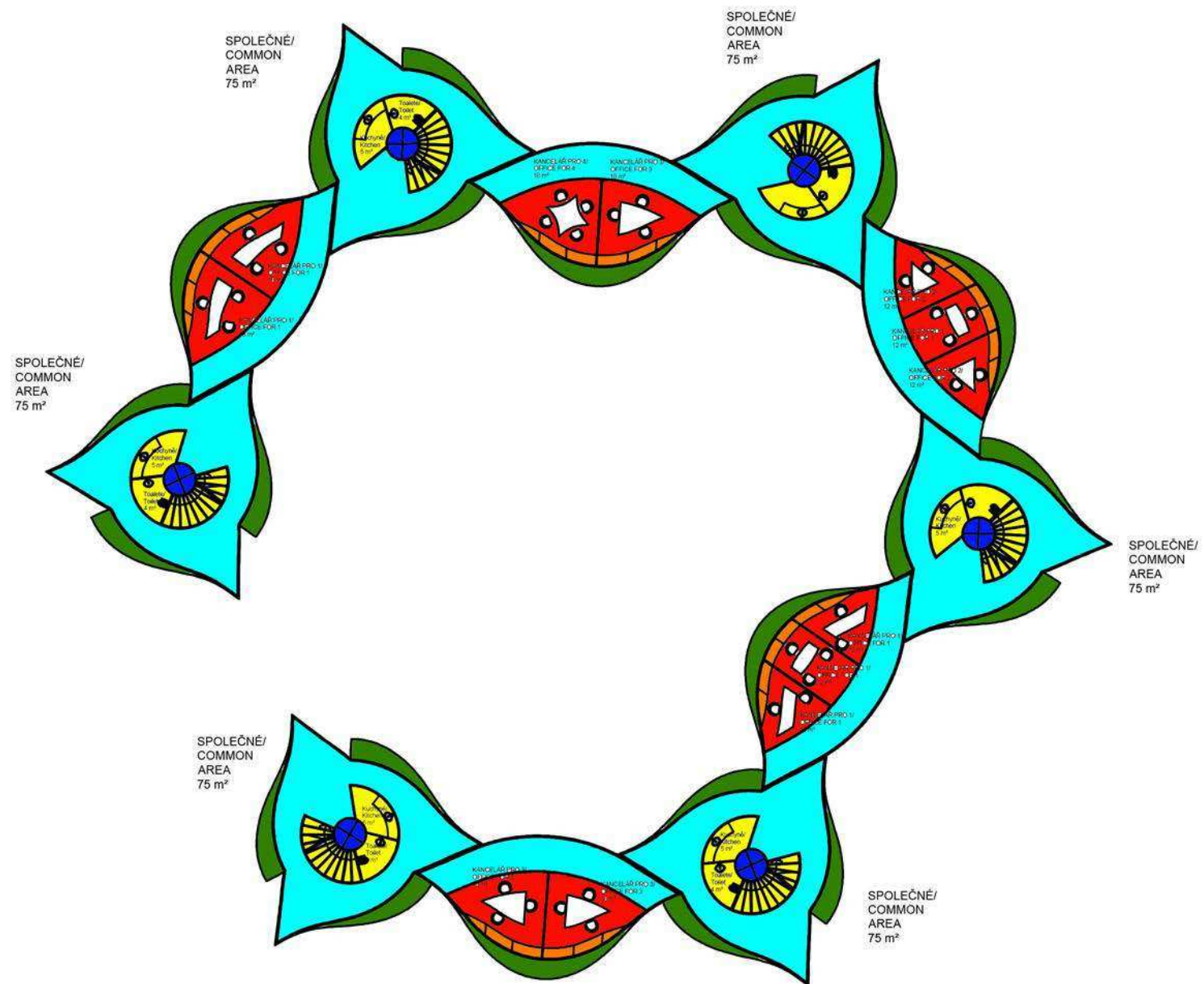


Responsive Transformer:

- application







Spiralling Slope:

- practice application









- **‘Service Design’ > non-anthropocentric eco-systemic services**



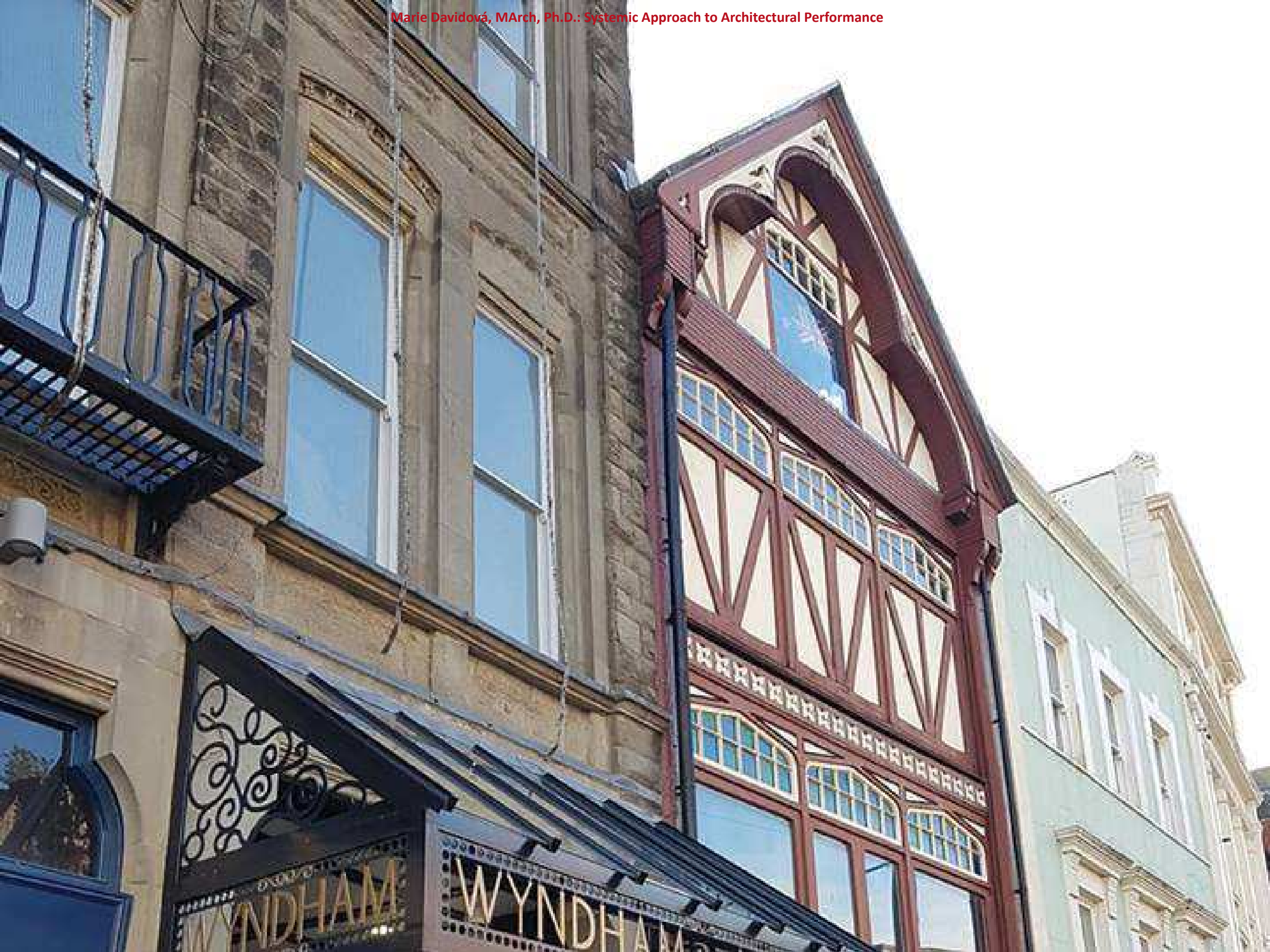










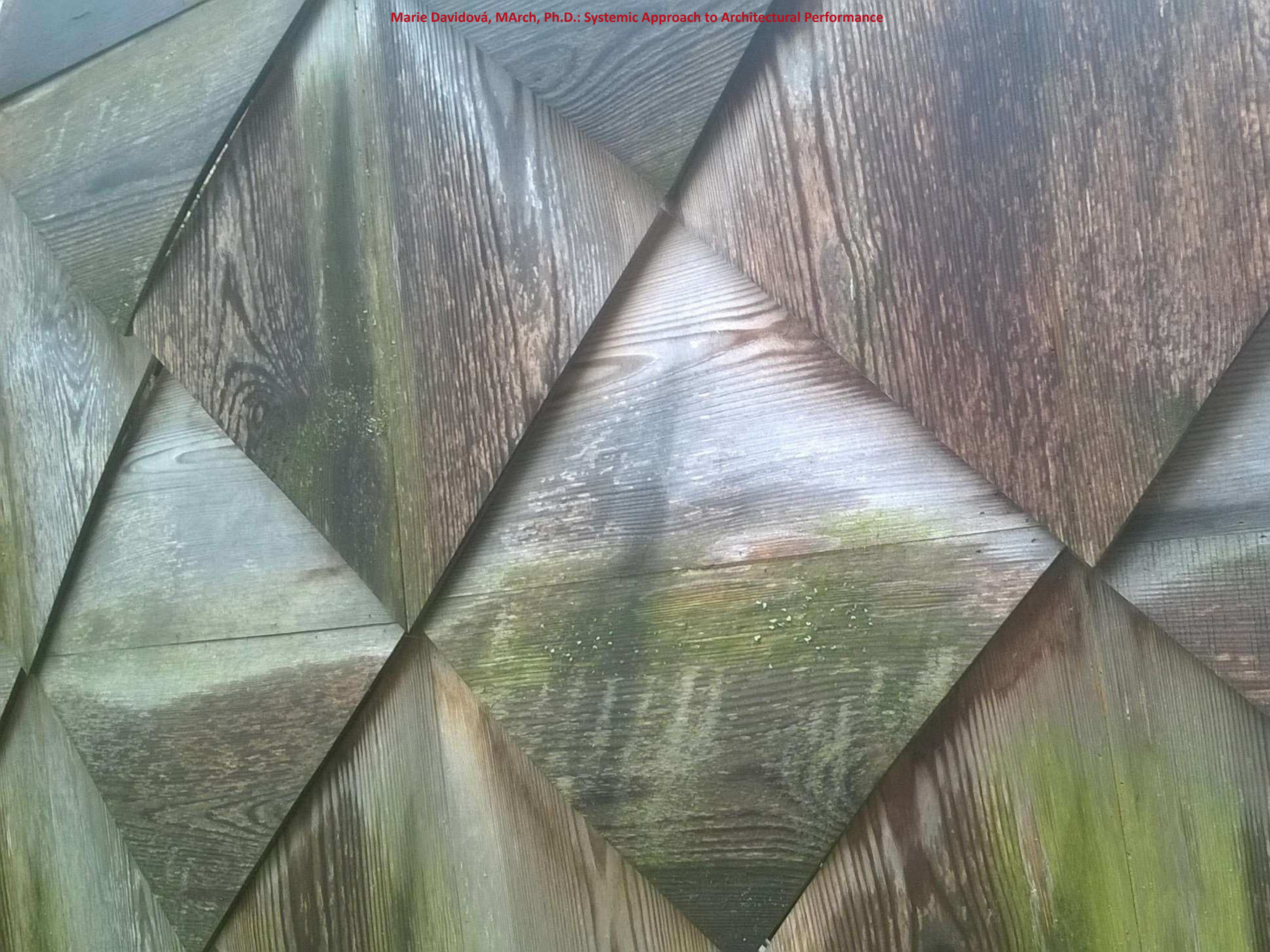








- ‘Co-Design, Co-Creation and DIY’



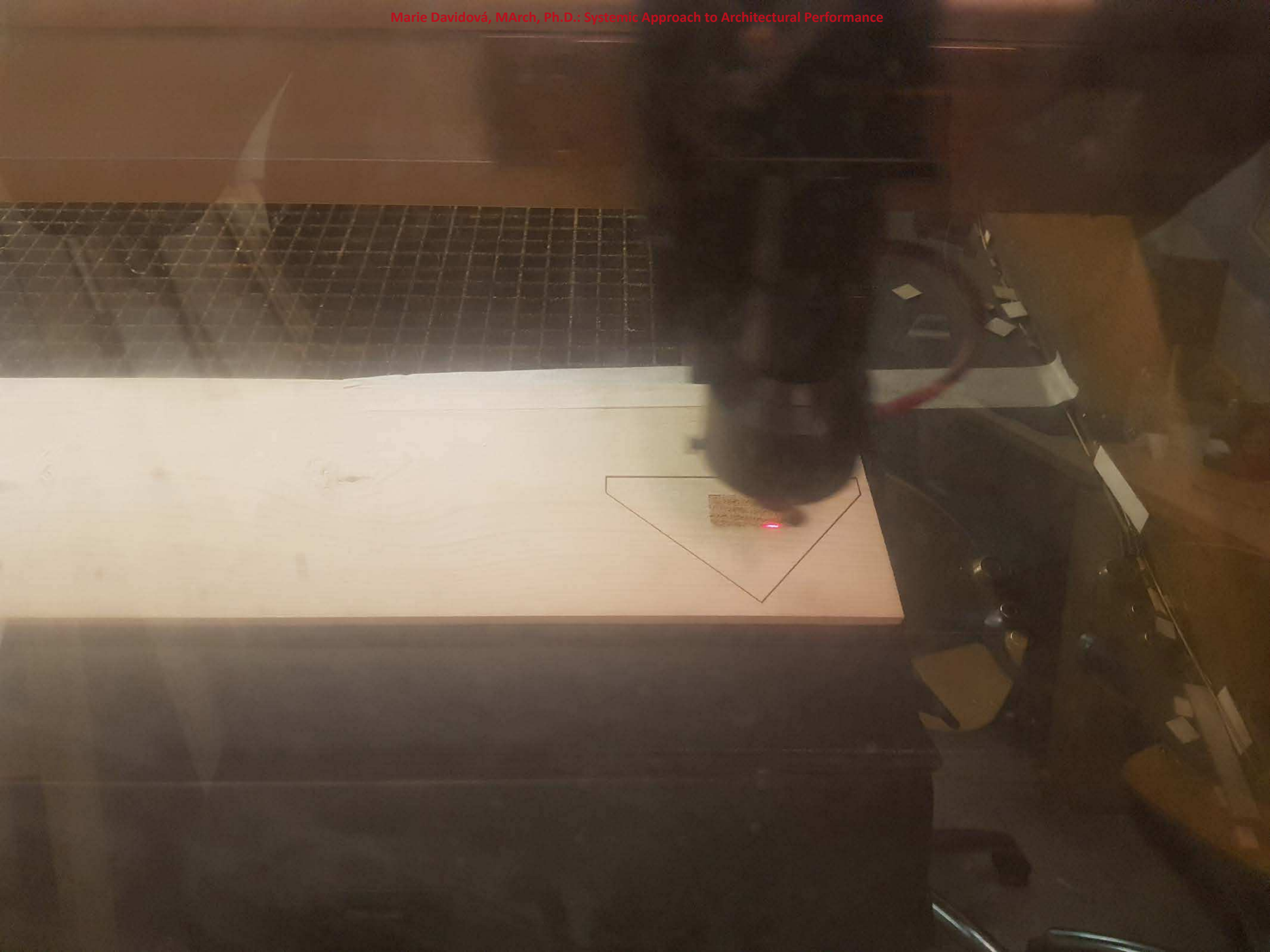
















Структури (Анімація: Ріжокор 2010; Система: Davidová 2010)



Figure 5: Script for knotting the joints 1 (Illustration: Rezen; Photos: Popov 2018; Concept: Závada & Davidová 2010)
// Інструкція зчеплення стовбурів (ілюстрація: Резен; фотографії: Попов 2018; концепція: Závada & Davidová 2010)



Figure 6: Script for knotting the joints 2 (Illustration: Rezen; Photos: Popov 2018; Concept: Závada & Davidová 2010)
// Інструкція зчеплення стовбурів (ілюстрація: Резен; фотографії: Попов 2018; концепція: Závada & Davidová 2010)

The code is written for Rhino 6 (Robert McNeel & Associates, 2018) to be open there in Grasshopper (Davidson, 2017). Download its evaluation version [here](#).

Please, download it [here](#).

3.2 FOLLOW THE STORY BOARDS



Figure 4: Design Process Story Board (Psaras 2018)

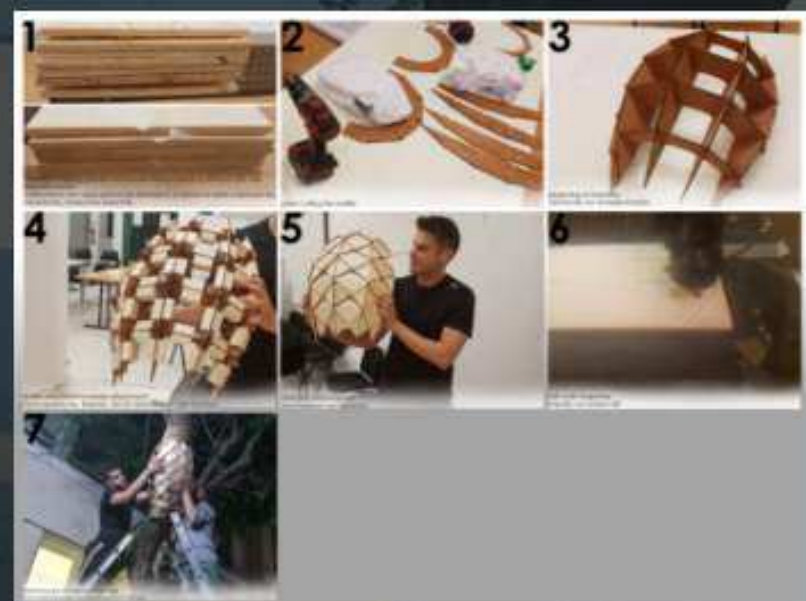


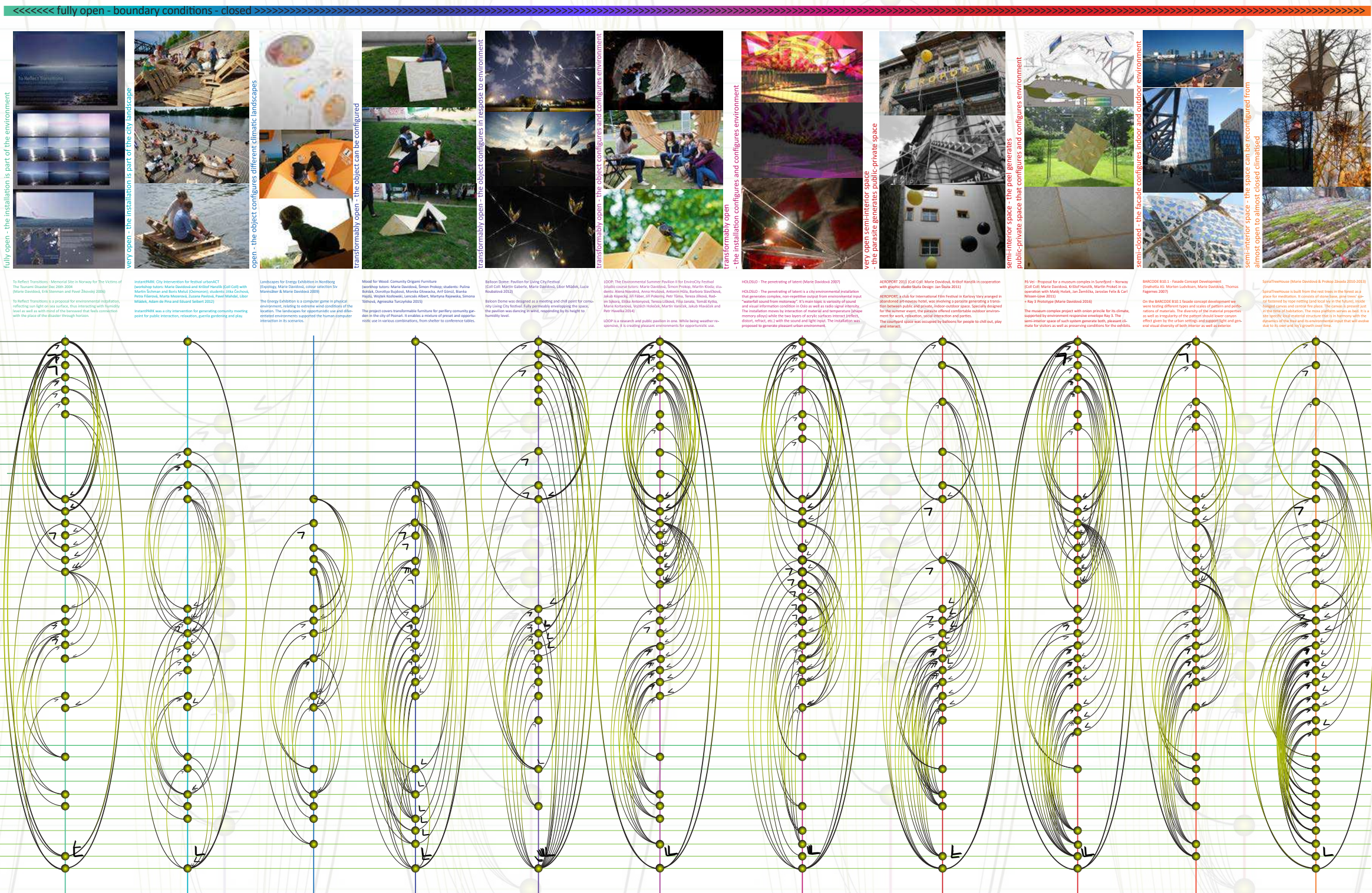
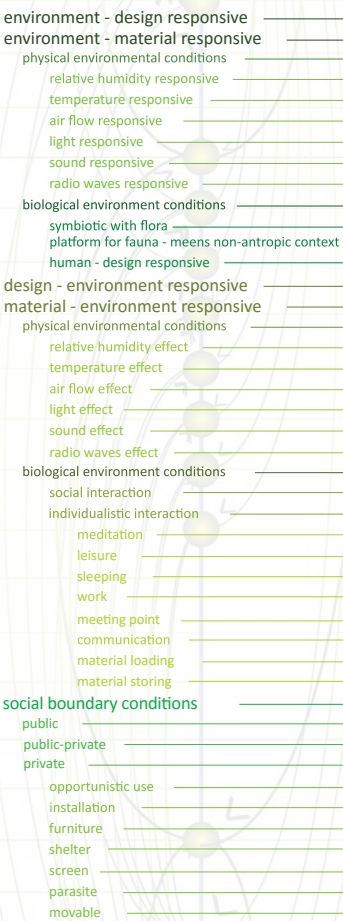
Figure 5: Prototyping Process Story Board (Psaras 2018)

Design's Boundary Conditions in Relation to Environmental Interactions GIGA-map

Systemic Approach to Architectural Performance and Wood as a Primary Medium to Architectural Performance
project
Marie Davidová

This GIGA-map developed as a ZIP-analysis of GIGA-mapping Workshop lead by Birger Sevaldson that was mapping pavilions from the project Wood as a Primary Medium to Architectural Performance. It is mapping a problem of different types of environmental, biological as well as physical, interactions through a range of boundary conditions of different designs. The case designs were either authored or co-authored by the GIAGA-map's author and were selected due to their suitability to the not fully strict 'gradient'.

The map lays out a matrix of parameters and relating their interactions that often generate more or less complex feedback loops, some of them cycling even in hierarchical constellations. The stroke thickness doesn't fully reflect the hierarchy in the system but the importance of related interactions. The gradient of the splines represents the boundary crossings, while the colour gradient of lines and texts for each project represent a range from design's openness to closeness of the boundary.



material - environment responsive

Marie Davidová, MArch, Ph.D.: Systemic Approach to Architectural Performance

physical environmental conditions

relative humidity effect

temperature effect

air flow effect

light effect

sound effect

radio waves effect

biological environment conditions

social interaction

individualistic interaction

meditation

leisure

sleeping

work

meeting point

communication

material loading

material storing

social boundary conditions

public

public-private

private

opportunistic use

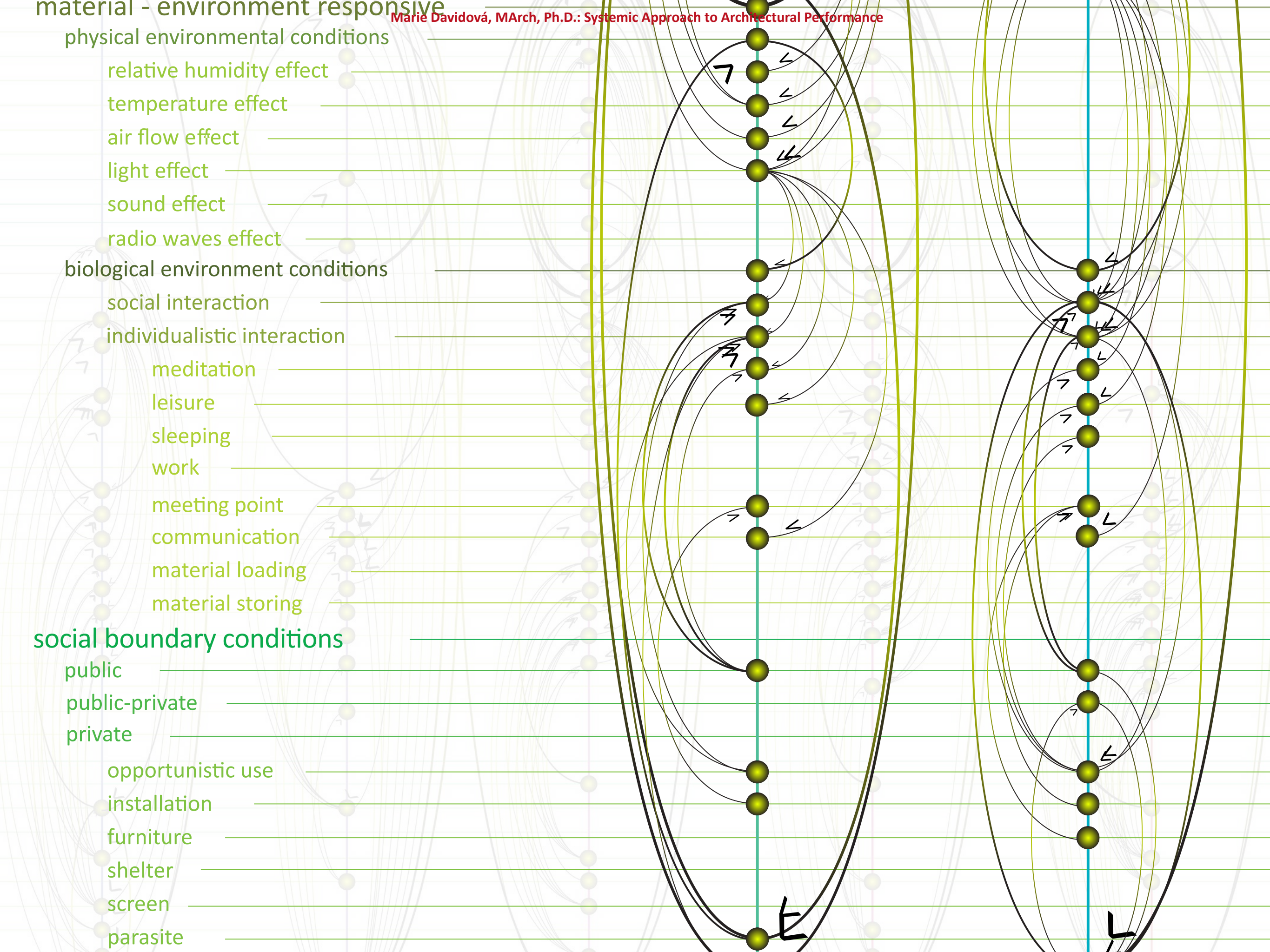
installation

furniture

shelter

screen

parasite



SpiralTreeHouse (Marie Davidová & Prokop Závada 2010-2013)

semi-interior space - the space can be reconfigured from

SpiralTreeHouse (Marie Davidová & Prokop Závada 2010-2013)

- Shift from Anthropocene
- > Biodiversity and Climate Change Adaptation

Research by Design through:

- > **Eco-Systemic Prototypical Urban Interventions**
 - > **Related Historical Prototypes Studies**

Leading to the Shift from Anthropocene in Built Environment >

- **cross-species co-living > dwelling and edible landscape**
- **co-design process > the process of its performance**
- **public and transdisciplinary communication and co-design**
 - **analogue and digital co-design for adaptation**
- **Creative Commons Attribution-NonCommercial 4.0**

Shift from 'Cities for People' (Gehl, 2010)

- > Participation of Both, Biotic and Abiotic Agency**
- > One Co-Performative Ecosystem, the 'Real Life Laboratory'**

Twofold ‘Ecological Urbanism’ (Mostafavi & Doherty, 2016):

- **physically prototyping and testing our work through overall ecosystemic engagement**
- **tool to communities to spread the work through DIY**

**These multi-layered and multi-scaled local specific
eco-systemic trans-co-design real time processes are
therefore building the ground of the very open newly
emerging design field of**

Systemic Approach to Architectural Performance

Thank you!

Marie Davidová, MArch, Ph.D.

Founding Member and Chair of Collaborative Collective
md@collcoll.cc

Lecturer at the Welsh School of Architecture
Founding Member of Systemic Design Association

Read my publications at:

